DOCUMENT RESUME

ED 222 776 CE 034 328

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TITLE Career Key: A Career Library Management System.
PUB DATE [82]
NOTE 14p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Career Education; Higher Education; Indexes; Information Dissemination; *Information Processing; *Information Systems; *Library Materials; *Microcomputers; Program Design; Program Development; User Satisfaction (Information)
IDENTIFIERS Career Information Systems; *Career Key (Microcomputer System); *Florida State University

ABSTRACT

Career Key is a microcomputer library management system designed to access the cataloging records of the Career Development Library at Florida State University. The Career Key system, which provides access to a comprehensive and integrated multi-media collection of about 1,500 career resources, is based on a classification system involving 35 subject headings in the following subject areas: career planning, occupational information, educational opportunities, work experience and training, job hunting skills, and career placement. A tool for both subject retrieval and maintenance of library records, the Career Key system allows for the performance of five separate library functions--entering new documents, updating old document entries, updating codes, reporting, and subject referral. Thus far, client and staff responses to the Career Key have been positive. Because the system provides a centralized, compact indexing system to the library's entire career resource collection, it has eliminated the need for maintaining numerous sets of catalog cards and commercial indexes. In addition, the computer-generated printout of relevant library resources has provided a convenient guide for clients and has allowed for the more efficient use of professional staff time. (MN)

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ED222776

Career Key: A Career Library Management System

This paper describes a project undertaken at Florida State University to index the contents of its career library on a microcomputer.

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CE034278

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CAREER KEY: A CAREER LIBRARY MANAGEMENT SYSTEM

Scenario

A student walks into a very busy career counseling center and asks a counselor about the possibilities of living and working in a foreign country. The counselor, who is the only counselor on duty, is aware that there are many information resources available in the center's library that deal with living and working abroad, but is uncertain about the location of each of these resources. The counselor leads the student to a microcomputer in the library and explains that the computer is the "key" to the location of all resources in the library on any career-related topic. The counselor assures the student that the computer has built-in instructions, is easy to use, and that a user's manual is available next to the computer to further clarify the searching procedure. The counselor then goes back to the counseling station to serve other waiting clients.

The student spends a minute or two looking over the user's manual and then begins to search the computer by selecting appropriate topics listed on the computer's video screen. When the student selects the topic entitled "Living Abroad", the video screen indicates the number of resources in the library on the topic and offers the student a choice of available media types. The student selects the "All Media Types" option. A small printer next to the computer begins to produce a list of all of the library's resources under each media type containing information on living abroad. The list includes the call number, location, author, and title of each resource. The student tears off the list from the printer, and using it as a guide, begins to find relevant library materials.

This entire searching process, from the time the student presses the first terminal key until the time the list is torn from the printer, takes about three minutes.

The Library

Clients of Career Development Services at Florida State University are using Career Key, a microcomputer library management system, to access the cataloging records of the Career Development Library. The library is a comprehensive and intergrated multi-media collection of about 1500 career resources. It houses all of the informational materials that support the three component offices of Career Development Services: Career Placement, Cooperative Education, and the Curricular-Career Information Service.

Historical Background

The Curricular-Career Information Service (CCIS), is the career Planning unit of Career Development Services. Since the majority of resources in the library are concerned with career planning, it is from the previous system used to organize and index CCIS resources that Career Key evolved.

Since its inception in 1973, CCIS has had as one of its main objectives the promotion of information-seeking skills to clients as a strategy for solving decision-making problems. To this end, CCIS has been designed primarily as a self-help program, where clients can gain easy access to career information without depending upon the availability of professional counselors (Reardon & Minor, 1975).

Providing easy access to its resources, an essential ingredient of its self-help orientation, has been a perplexing problem for CCIS from the beginning. As the resource collection grew larger, so did the access problem.

One attempt to solve this problem involved consultation with the Schoolbof Library Science. Members of a Cataloging and Classification class developed a system that divided the library into two sections; Occupational and Non-occupational. Occupational materials, (those containing information about specific occupations), were classified according to the Dictionary of Occupational (DOT) titles classification scheme. These materials were indexed by an alphabetical card catalog of occupational titles and by a card catalog of DOT codes filed numerically. The Non-occupational section encompassed all other subjects, such as decision-making, college directories, and resume writing. These were classified according to the Dewey Decimal System for call numbers, and were indexed by subjects in a card catalog of Library of Congress (LC) subject headings. LC headings were later replaced by a more versatile indexing system called PRECIS. The development and operation of this previous CCIS cataloging system is well-documented in papers by Minor, Reardon, & Deloney (1976), Green (1979), and Clack (1979).

Although this system proved helpful in locating information, it did not provide the "ease" of access that CCIS administrators were seeking. Clients, as well as new staff members, hesitated to use the card catalog system, which was multi-faceted and complex. The feeling persisted that information was not being easily accessed, and therefore was not being used to its fullest advantage.

In their on-going efforts to improve the library access system, CCIS administrators explored the possibility of using a microcomputer to more effectively store and retrieve cataloging records. They concluded that a microcomputer would improve access to career information and would also simplify the management of library information from the cataloger's point of view.

Funding for the conversion of the card catalog to a computerized library management system was obtained in 1980 through a federal grant administered by the Vocational Division of the Florida Department of Education. It was decided that the computer would store the records for the career resources of all departments in Career Development Services, and not just those of CCIS. Placement, and Cooperative Education materials would also be included. A full-time professional librarian and a half-time computer programmer were hired to design and develop the system.

A New Classification System

As the librarian hired to work on the microcomputer conversion project, I was faced with the challenging task of finding a cataloging and classification system that would suit microcomputer application. After studying the existing Dewey Decimal/DOT system, I concluded that it would not be a practical system to adapt for use with the microcomputer. I conceptualized a system that would present a complete list of clear, precise subject headings for selection on the video screen. The user would make a subject selection by pressing the terminal key corresponding to the number of the desired subject heading and would then get a printed list, via a printer connected to the computer, of all library resources on the topic.

I soon discovered that a standardized list of precise subject headings covering all of the various aspects of career development did not exist. The PRECIS system of subject headings used in CCIS consisted of over 500 headings in conjunction with hundreds of cross-references to index the content of only half of the library collection - the non-occupational section. This was obviously not the simple, precise list of topics I was seeking.

I decided to develop a "home made" list of subject categories that reflected the kinds of information contained in our resource collection. An examination of the collection's content revealed that six broad categories of information were covered: Career Planning, Occupational Information, Education Opportunities, Work Experience and Training, Job Hunting Skills, and Career Placement. These six categories were further examined and subdivided into narrower categories. The process continued until all topics covered by the collection were represented in one integrated scheme. The resulting system of subject headings with classification numbers is presented below.

Career Development Services
*Library Classification Scheme

I. Career Planning

IA Career Choice
IB Career Change
IC Job Outlook
ID Working Conditions
IE Job Success
IF Life Style
IG Special Populations

II. Occupational Information

IIA Multiple Occupations
IIB Specific Occupations
IIC Occupations by Major

III. Education Opportunities

IIIA High School Courses
IIIB Vocational-Technical Schools
IIIC Colleges
IIID Florida State University Academic Programs
IIIE Alternative Education
IIIF Financial Aid
IIIG Special Populations
IIIH Study Skills

IV. Work Experience and Training

IVA Cooperative Education
IVB Summer Jobs
IVC Apprenticeship
IVD Training Programs
IVE On the Job Training
IVF Volunteerism
IVG Internship

V. Job Hunting Skills

VA Resume Writing
VB Interviewing
VC Assertiveness
VD Employment Agencies
VE Unemployment

VI. Career Placement

VIA Current Job Openings
VIB Company Literature
VIC Government Agencies
VID Employer Directories
VIE Association Directories

*This scheme presents the main subject headings. Some of these subjects are further subdivided, i.e, Living Abroad is one of the subdivisions under Life Style.

Major problems remained to be solved before a complete classification system was to emerge. They concerned categories IIB Specific Occupations, and IIC Occupations by Major.

The subdivision Specific Occupations, under the broad category of Occupational Information, was to include all of the resources on occupations that had been previously treated as a separate collection and classified under the DOT system. This presented a two-fold problem. First, the classification IIB, by itself, could not be used to access the more than seven-hundred occupations about which the library contains information. An auxilliary classification system was needed to index each individual occupation. Secondly, there was not enough data storage capacity in the computer system to store hundreds of occupational titles and all of the necessary cross-references. Contrary to my original intention of displaying all possible choices of subject categories on the video screen, I found it necessary to use an alphabetical file of coded job titles with cross-references outside of the computer catalog to index occupations. The user would need to refer to this external occupations file to look up an occupational title, and would then need to type the corresponding numerical code into the computer to retrieve the catalog records for materials classified under the code.

At first glance, the DOT system of job titles and codes semed like the obvious classification system to use in the occupations file. However, many considerations led to the decision to use the Standard Occupational Classification (SOC) system instead. Like the DOT, the SOC is a multilevel classification system using two-digit base numbers to classify broad occupational groups and adding more digits to the base number for classifying increasingly narrower occupational categories that fall under broad groups. The following illustration compares a section of the SOC class system with the DOT system.

SOC

20	SOCIAL, RECREATION, AND RELIGIOUS WORKERS
203	SOCIAL AND RECREATION WORKERS
2032	SOCIAL WORKERS
2032205	Supervisor, Volunteer Services
2032208	Field Representative
2032211	Caseworker
2032214	Caseworker, Child Welfare

DOT

19	MISCELLANEOUS PROFESSIONAL, TECHNICAL, AND MANAGERIAL OCCUPATIONS
195	OCCUPATIONS IN SOCIAL AND WELFARE WORK
195.107-014	Caseworker, Child Welfare
195.107-018	Caseworker, Family
195.107-022	Social Group Worker

The maximum number of digits assigned at the lowest level in the SOC coding structure is seven. In the DOT system, nine digits are assigned at the lowest level. Since the user would have to type in the code number, an advantage was seen in using the shorter SOC codes. Another point in favor of the SOC is the fact that federally funded occupational information delivery systems are mandated to provide SOC codes for all of the occupational titles that they contain. CCIS uses two such delivery systems - CHOICES, a computerized career guidance system, and VIEW, a set of microfiche containing occupational information. Both systems use SOC codes and, therefore, could provide a direct link to the computerized library catalog and to the resource collection.

Category IIC Occupations by Major presented the same problem as IIB. The library contains information linking careers with over one-hundred academic majors. Due to the lack of data storage capacity, an external file was necessary to index majors. To avoid having to type in the name of the major, and in keeping with the method used to select Specific

Occupations, a numerical code was assigned to each major. HEGIS (Higher Education General Information Survey) codes were chosen for this purpose. HEGIS is a four digit coding system used to inventory all academic degree programs within the State University System of Florida.

When a user selects either of the categories Specific Occupations or Occupations by Major, a message appears on the video screen directing the user to the card file to attain the appropriate access code.

Library Records Management

Career Key is a tool for both subject retrieval and maintenance of library records. Upon entering the system, five separate library functions are listed for selection in a "Main Menu of Options." They are:

ENTER NEW DOCUMENT (for input of new cataloging records)
UPDATE OLD DOCUMENT ENTRY (for changing or deleting bibliographic data)
UPDATE CODES (for changing or deleting subject codes)
REPORTS (for generating various reports)
SUBJECT REFERRAL SYSTEM (for patron retrieval of records by subject)

Bibliographic data and subject codes are entered into the system from a worksheet which has been filled out by the cataloger. Bibliographic data and codes can be changed or deleted via the "Update" functions.

The system is capable of generating various reports, such as lists of new resources, lists of resources published within requested date ranges, reports on total holdings for each media type, and total price reports.

Data entry, update functions, and report generation, can be performed only by authorized staff members who have access to a security code. Library patrons have access to only the "Subject Referral" function.

An overview of all software and hardware components of Career Key is appended.

Final Thoughts

Libraries are currently using microcomputers for such processes as circulation control, ordering and receiving new materials, and producing

catalog cards. A search of the recent library literature reveals that the cataloging and bibliographic retrieval of a library's entire resource collection is a relatively new and unique application for microcomputers. An obvious reason for this is the fact that most library collections are too large for all records to be stored in the limited storage capacity of a microcomputer system. Career resource centers, on the other hand, have comparatively small enough collections to lend themselves to microcomputer management.

A microcomputer solution to the problem of access to information is not without disadvantages. A major potential problem, as anyone with computer experience knows, is the ever-present danger of equipment breakdown. Once the system is set up for operation, a computer technician should be available who can trouble-shoot when there are hardware problems. A computer programmer should also be available to maintain software and to make program modifications whenever necessary.

Thus far, client and staff responses to Career Key have been very positive. The system provides a centralized, compact indexing system to our entire resource collection. There is no longer a need to maintain numerous sets of catalog cards or commercial indexes. The computer-generated printout of relevant library resources is providing a convenient guide for clients to find the information they need. Staff members are reporting that they have been reshelving materials that were seldom if ever used when previous indexing systems were in operation. It appears that we have found a very satisfactory solution to the problem of access to career information.

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APPENDIX

Career Key: Technical Overview

Equipment: Apple II+ with 48K of RAM (up to eight simultaneously), a monitor, the Corvus 20M hard disk subsystem, the Corvus Constellation local network subsystem, and a Silentype thermal printer.

Language: All programs are written in Applesoft floating point Basic with 6502 assembly subroutines used only in time-critical or error-trapping routines.

Programs: The entire system consists of a series of interlocking programs that perform all of the routine operations for the librarian and student, and several independent utility programs for the programmer to utilize in diagnosing and correcting problems, and initializing the system.

All operations of the student and librarian are activated by choosing from a Main Menu. The Main Menu can be viewed as if one were standing in a room with hallways leading off in different directions. Each hallway corresponds to a single option from the Main Menu and travelling down the hall leads one to a librarian or student function. Each hallway will also bring one back to the main room. Each option of the Main Menu program corresponds to a separate program. This modularity makes adding or deleting options relatively straightforward.

All foreseeable errors are either corrected or the librarian is notified, and the system shuts down quietly.

Detailed documentation of the system and its flow are contained within the various programs.

File Structures: The system uses a total of 67 volumes of disk space. All programs are contained on the first volume and data files on all of the rest. There are five types of data files, three for access by code index, one containing document data, and one for cross reference purposes. In all

of the access files, Record # 0 is used to contain the total number of records within that single file; and the first Document file contains the TOTAL number of records within the entire system. The precise nature of the files are as follows:

Documents: 55 volumes of random access ASCII text type files with a record length of 495 bytes. It contains the bibliographic data elements for each source material contained in the library. There are a maximum of 100 records per volume.

SOC-Codes: 3 volumes of random access ASCII text type files with a record length of 310 bytes. The record contains a seven byte string representation of an SOC number, and a 75 element numeric array of pointers into the document files. There are a maximum of 400 records per volume.

CALL-Codes: 3 volumes of random access ASCII text type files with a record length of 610 bytes. The record contains a 10 byte string consisting of a Roman numeral, a letter, and a digit; and a 150 element numeric array of pointers into the document files. There are a maximum of 200 records per volume.

HEGIS-Codes: 3 volumes of random access ASCII text type files with a record length of 610 bytes. The record contains a 5 byte string consisting of an "H" and four digits, and a 150 element numeric array of pointers into the document files. There are a maximum of 200 records per volume.

U-ACCESS Codes: 5 volumes of random access ASCII text type files with a record length of 142 bytes. The record contains a pointer to a single document within the document files and a 15 element string array of the current access codes for that document. There are a maximum of 826 records per volume.